

Hobbies

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How to make a 12-inch model of AN OLD-TIME BUS

We are giving our model makers another interesting model to make, this time of an early type omnibus, the kind drawn by three horses about the year 1829. Our illustration shows 'Shillibeer's' bus, a very picturesque and gaily painted vehicle and the forerunner of the double-decker horse bus which some can still remember.

Our model is nearly 12in. long and 6½in. high, with the horses. The whole can be put on a base and fixed for ease in moving the whole thing about. The horses are shown standing, and are therefore best secured permanently to a base.

The woodwork will demand care and

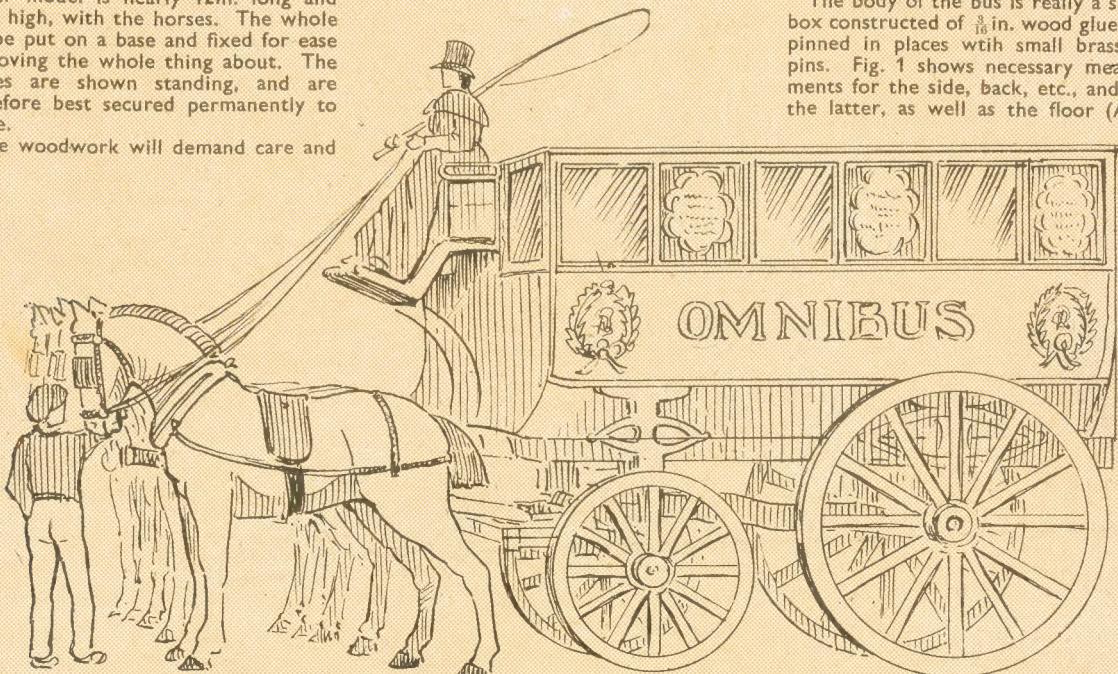
thought in the cutting, fitting and gluing together and the painting, too, will require careful consideration and patience. Knowing what excellent examples have been made by some of our modellers, this omnibus will not prove too much for many of them.

There is scope here, too, for quite an interesting lesson in simple carving, the horses and the well-cloaked driver can

be made to appear quite life-like by the judicious use of the pocket knife, a $\frac{1}{2}$ in. chisel, perhaps, and two grades of glass-paper. The fretsaw is necessarily the most important tool required for this model, and all parts are cut from the full-size patterns given on page 207 of this issue, and from the dimensioned diagrams given here.

The Body of the Bus

The body of the bus is really a simple box constructed of $\frac{1}{16}$ in. wood glued and pinned in places with small brass fret pins. Fig. 1 shows necessary measurements for the side, back, etc., and how the latter, as well as the floor (A) go



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between the sides and the back. The floor measures 6 $\frac{1}{2}$ in. long by 2 $\frac{1}{2}$ in. wide, and from the cut-away view at the front of Fig. 1 we see how the floor is fitted and then shaped up to meet the curve of the front of the body.

The two sides (B) are each 6 in. long by 2 $\frac{1}{2}$ in. wide, the near one in the diagram being shown cut away to indicate the floor etc. arranged inside. The upper front (D) of the body is 2 $\frac{1}{2}$ in. long by 1 $\frac{1}{2}$ in. wide, and is glued and pinned between the sides. The lower front should be formed from a piece of stout white card bent to the slight curve of the

off at the front as seen in the details and side view of the coach, Fig. 4.

The rear springs of the coach are shown at (L) full-size among the patterns. Two must be cut $\frac{3}{16}$ in. thick, as also will the two forward springs (M). All four springs will be glued to the face of rails (N) and immediately under the sides (B) as seen in Fig. 1. Connecting the rear pair of springs is the rail (I) measuring 2 $\frac{1}{2}$ in. by $\frac{1}{2}$ in. and seen in detail in dotted lines in Fig. 4, and in detail Fig. 5.

Axle Bar

The axle bar (J) measures 3 in. long by

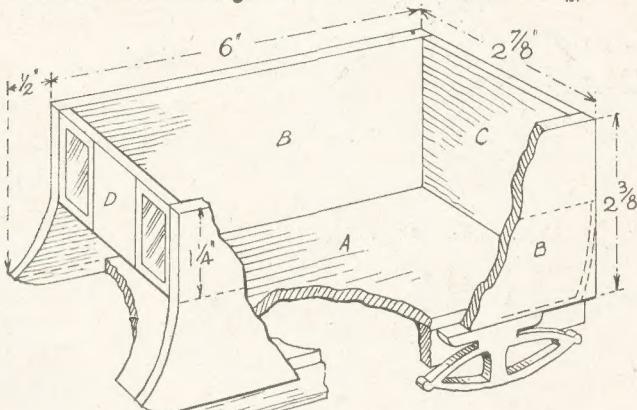


Fig. 1—Helpful constructional details of coach body

sides (B). The card is held to the latter by small shaped blocks of wood glued along inside.

The body of the coach may be finished constructionally by adding the top. This also consists of stout card or, better perhaps of $\frac{1}{8}$ in. wood with the edges nicely rounded to finish flush with the sides, end and front of the body.

The driver's seat at the front of the bus is seen at Fig. 2. A simple box-like portion is made for the actual seat which measures 1 $\frac{1}{2}$ in. long by 1 in. deep. This is made of two ends of $\frac{1}{8}$ in. or $\frac{3}{16}$ in. wood with stout card bent round to form the seat and its front. At each end of the seat there is a wire rail, bent as shown and fixed to the wooden back and ends of the seat.

Seat and Footboard

The outstanding bracket forming seat support is made from the three pieces shown. Wood $\frac{1}{8}$ in. thick is used here, and two of the pieces must be chamfered so the foot rest will stand at right angles to its sloping backing piece. There are two curved under-supports which hold the foot board rigidly in place. These are of stout wire, secured with fret pins to the underside of the board and the underside of the floor (A) of the coach.

Turning again to the body of the coach we next cut and fit two rails (N) on the underside of the floor. In Fig. 3 the position of these can be seen to be just inside the thickness of the sides (B), with back rail (E) fitting on to it. This rail comes flush with the back (C) of the coach as seen in Fig. 3. Pieces (F) and (G) measure 1 $\frac{1}{2}$ in. long by $\frac{1}{8}$ in. and $\frac{1}{8}$ in. wide respectively and form the step up into the coach. The two rails (N) are shaped

$\frac{1}{8}$ in. square. It runs beneath, and is glued to rail (I). A small notch is formed, into which the undercarriage rail (H) is fitted as shown. A cross rail (K) connects the front pair of springs, the latter being cogged in as seen in Fig. 4. A complete view of the front under-carriage is given in Fig. 6, its main width being shown, while the full length is 3 in., which covers the front axle.

All six rails forming the under-carriage are $\frac{1}{8}$ in. square and are glued and pinned together. The circular turntable is 1 in. diameter and to it the cross rail (K) is glued and pinned. On the front rail of the chassis, two staple-like fittings made of $\frac{1}{16}$ in. strip brass or tin are pinned to the rail. These are to take the ends of the shafts between which the middle horse stands, and is harnessed.

The four little hooks take the ends of the draw-chains connecting with the collars of the outside pair of horses. Stout wires connect the front axle with the under-carriage (see Fig. 6 on pattern page). These are added to stiffen the construction, whilst stiffening blocks may be added where deemed necessary for the same purpose.

We have included full-size patterns for one of each

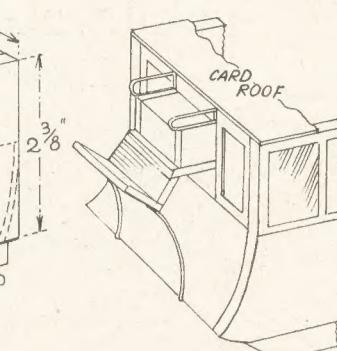


Fig. 2—The driver's seat

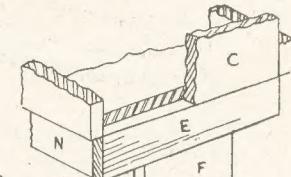


Fig. 3—The back and step

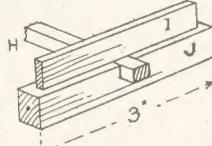


Fig. 5—Spring link

will give the correct standing position of the horse. The body and legs of the three horses will be carved and shaped correctly and the harness put in later with paint.

The driver is made from the pieces (C), (D) and (E). Piece (C) should be $\frac{1}{4}$ in. thick, and the two side pieces (D) $\frac{1}{16}$ in. thick with the arm and cape sections (E) $\frac{1}{16}$ in. All the parts must be glued carefully together according to their various outlines, afterwards carved realistically and finally painted.

Painting the Coach

The coach will be painted up in bright matt enamels, green as a backing to the word 'omnibus', the wording being in yellow with black shading. The panels between the windows should be dark green with decorative panels in yellow with black wording. The wreaths on the green ground should be yellow with yellow middles. The rail beneath the green panels should be black with the springs and undercarriage done red.

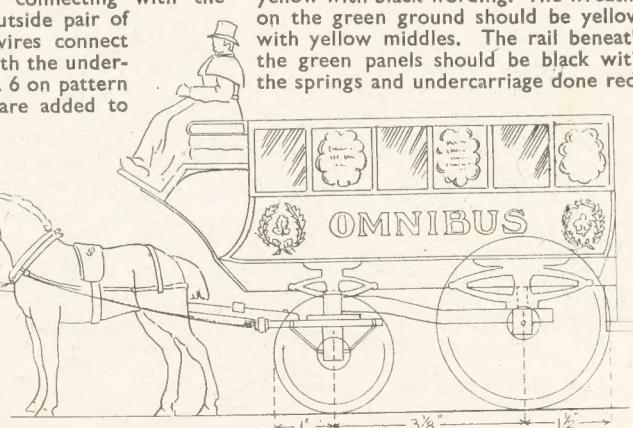
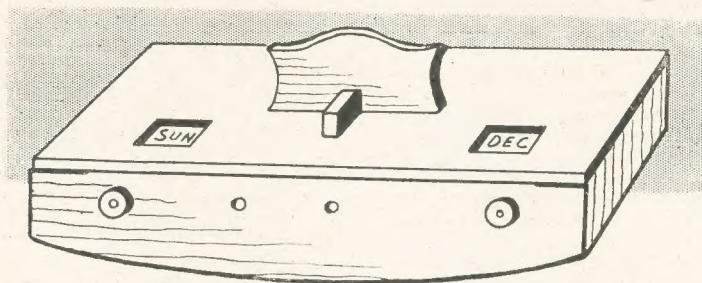


Fig. 4—Side view detail of wheel positions

Simple mechanism which will last for years in A BLOTTER CALENDAR



A PERPETUAL calendar is always a handy thing to have, but its usefulness is greatly increased when it is incorporated in the desk blotter described on this page. It makes an ideal gift and because the calendar is perpetual it is suitable for any time of the year or occasion.

The base is curved to make the task of blotting easier—just a rock backwards and forwards once with a light pressure is sufficient to blot quite a large area. The dates, days of the week and months are shown on endless belts which are worked by small knobs on the sides.

Walnut would be a suitable wood to use, although any hardwood will do for the job. Start with the base of the blotter and then the case can be built around it. A piece of wood, free from knots, 6ins. long, 3ins. wide and $\frac{1}{2}$ in. thick is needed. It is rounded off from its thickness of $\frac{1}{2}$ in. in the centre to $\frac{1}{4}$ in. at the ends; first by sawing a block off and then finishing with a chisel and a glass paper block.

The Case

The case has an internal depth of 1in., therefore the sides and end pieces must be cut to this width. Two sides 6ins. long and $\frac{1}{4}$ in. thick, and two end pieces

Hygroscopic Houses

WHAT controls the figures WET, FINE, in the small weather-houses, one of which I would like to make? (D.W.—New Cross).

THE hygroscopic houses are on the simple principle of the humidity of the atmosphere affecting a piece of gut, on which the figures are hung. This gut is susceptible to the atmospheric conditions, and contracts and expands with the result that it turns slightly. This turning actuates the figures on the platform and causes them to come 'out or in' according to wet or fine conditions.

It is not, of course, strictly accurate, but makes an excellent little novelty. A full design for one has been published and is still obtainable, with kit of materials.

2 $\frac{1}{2}$ ins. long and $\frac{1}{2}$ in. thick are glued on to the curved base to form the framework of the case. They can be tacked on with panel pins as well, but in this case the pins should be punched in and the holes filled with a woodfiller.

The piece of wood which fits along the centre of the case also forms the handle and is 5ins. long, $\frac{1}{2}$ in. thick and 2ins. wide—half of the width being inside the case and the other inch is cut to form the handle as shown in the diagram.

The Top

The top is made of $\frac{1}{2}$ in. wood, 6ins. long and 3ins. wide and has a slot cut along the centre for the handle to slip through. This top piece which clamps the blotting paper in position at each end of the blotter is fixed down by a neat keyway cut in the handle. Cut and fit this before gluing the centre piece in to the case. The key that fits into this keyway slot is about 1in. long, $\frac{1}{2}$ in. wide, and the depth tapers from just under $\frac{1}{2}$ in. to $\frac{1}{8}$ in.

The next job is to cut and fit the rollers. Six will be needed, cut slightly under 1in. long so as to be an easy fit in the case. Dowel rod $\frac{1}{8}$ in. diameter is best for the rollers and they must all be carefully centred and drilled to take $\frac{1}{8}$ in. dowel rod to act as a pivot.

It is best to drill from each end of the rollers to ensure a more accurate result. Three of the pivot dowels will be 1 $\frac{1}{2}$ ins. long, and the other three, which are 1 $\frac{1}{4}$ ins. long, have the knobs fitted to them to turn to alter the calendar.

Roller Fixing!

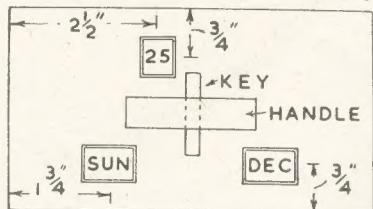
The holes can now be drilled in the case to take the roller pivots and they must be slightly larger than $\frac{1}{8}$ in. The exact positions of these are clearly marked in the diagrams. The rollers can now be fixed in position. A slight dab of glue will be sufficient to hold the pivot dowels in position, and the knobs, which are $\frac{1}{8}$ in. discs of $\frac{1}{8}$ in. wood can also be glued on.

Drawing paper can be used for the date, week and month indicator bands, but a better and stronger material would be glazed linen or tracing cloth. The width will be the same as the rollers, which is nearly 1in. For the date band you will need 10 $\frac{1}{2}$ ins., the days of the week 4 $\frac{1}{2}$ ins., and the months 6 $\frac{1}{2}$ ins.; to each of which must be added $\frac{1}{8}$ in. to make a lapped joint.

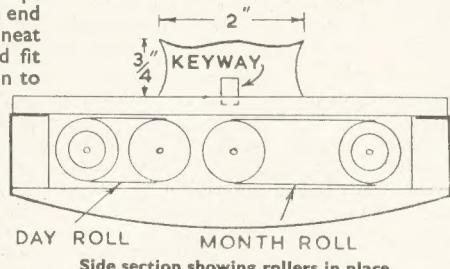
Assembly

After carefully marking out the bands, the numbers and lettering are put on with Indian ink. When the ink is thoroughly dry the bands can be placed on the rollers and gummed together, making them as tight as it is possible to get them.

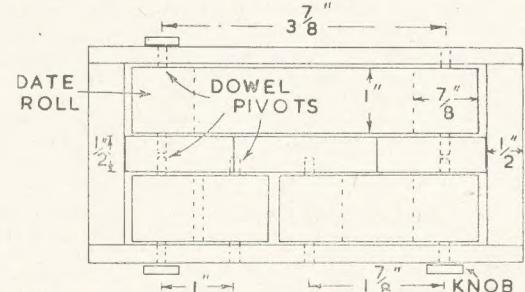
Before we can assemble the blotter we must cut three more holes in the top



Plan view of top with openings.



Side section showing rollers in place.



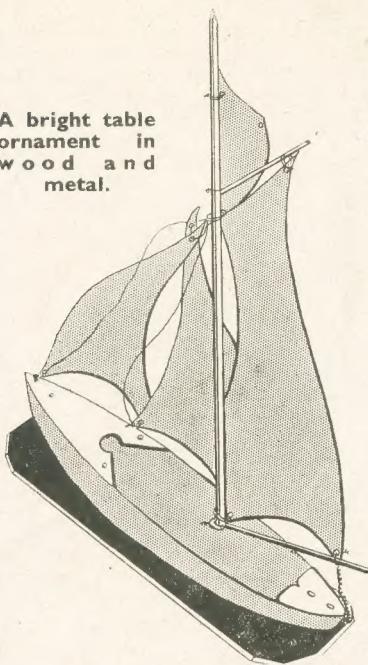
Inside view of mechanism.

piece—one for the dates $\frac{1}{8}$ in. square, and the other two for days of the week and months both being $\frac{1}{8}$ in. long and $\frac{1}{8}$ in. wide. All three holes have their four sides bevelled and the exact positions can be seen from the top plan.

The best way to finish the calendar blotter is to french polish it. Cut the blotting paper long enough to tuck in at the top about $\frac{1}{8}$ in. or $\frac{1}{4}$ in. at each end.

The clever craftsman should provide his home with AN ORNAMENTAL YACHT

A bright table ornament in wood and metal.



A PAIR of ornaments, to grace one's mantelpiece or sideboard, are the sort of things which no hobbyist

Il feel like buying as long as he has a few scraps of adaptable material at hand. The yacht is a most satisfactory subject for, the natural beauty.

The particular model from which the illustration is drawn has thin sheet metal sails, but they could have been done either in cartridge paper or lampshade parchment. The hull is of wood, with designs in bright metal screwed fore and aft. Irrespective of the kind of material used, here are the instructions necessary to make this attractive household decoration. If a pair is needed the sails are obviously cut in duplicate.

The hull is from any flat piece of wood 2ins. by 10ins. by $\frac{3}{16}$ in. thick and shaped at the ends. One end is cut to a point and

the other slightly 'blunted' and rounded. When this has been done it should be smoothly glasspapered and a hole is sunk to accommodate the mast about $6\frac{1}{2}$ ins. back, from the forward end.

As for the deck shapes, they can be made from bright sheet metal, cut out with a pair of snips or old scissors. Their outside shapes, of course, are determined by the particular shape of the hull when cut. By turning the hull upside-down and pencilling around the outside of it on to a sheet of paper, you will be able to get an exact fit. Punch the holes for the screws before fastening down.

The Mast

The mast can be made of any suitable thing from a thick knitting-needle to a filed-off stair rod or long wooden meat-skewer. It should be at least $10\frac{1}{2}$ ins. high. A touch of glue on the end and a tight fit in the hole should make it a permanent fixture.

Next, the boom. This is best made of a strip of steel or thick wire 5ins. long. One end is bent around the foot of the mast and fixed there with finer wire. The slightly smaller arm higher up the mast is affixed either in the same way or with a touch of solder. It is 3ins. long, at a height of 8ins. and set at the angle shown—about 35 degrees.

The four sails are cut and the holes punched in their corners. Whatever their chosen material may be, it is effective either to bend them into graceful positions to give the appearance of being filled by a breeze or, if paper is used, they should be fastened to the mast in such a way that this gracefulness is preserved, i.e., either higher or lower as the case may be.

When all the parts are ready for assembly, the question of colouring may be considered. The actual choice is best left to the maker's discretion but, as a suggestion, a few parallel lines running from top to bottom of each sail produces an amazing finishing touch. If the hull is to be stained or painted it is wiser to leave the metal parts clean.

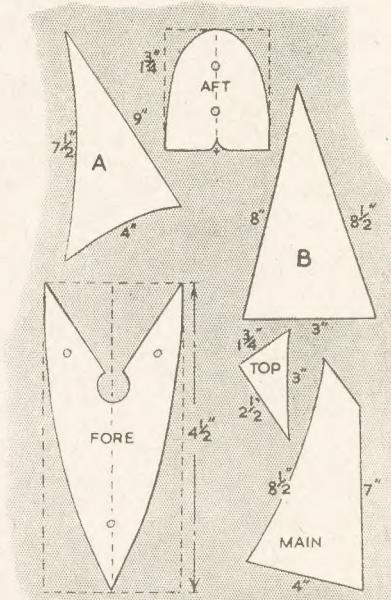
The fastening of the sails is done with

thin flexible wire. There is no need to bind tightly as the sails will be found to hold themselves in position. The wire is passed through the holes which have been punched in the corners of each sail for this purpose and, where applicable, fastened to the mast at the tops.

The bottom left-hand corner of sail (A) is wired to a raised screw at the forward end. Its right-hand corner is wired, together with the left-hand corner of sail (B) to a second screw placed in the side of the hull near the top edge. The remaining lower corner of sail (B) is affixed to the mast. The top corners of (A) and (B) are joined to each other and to the mast. For effectiveness the wire can be left running from point to point instead of being cut off short.

Fixing Methods

The method of fixing the larger sail



can be seen plainly in the illustration. The wire which fastens its lower right-hand corner to the boom is extended and fastened to another screw at the after end of the hull.

You may find that the model will stand firmly on its flat bottom but, even so, it is advisable to add some kind of baseplate to eliminate all chances of having your handiwork knocked to the floor and damaged. A piece of Perspex or wood 10ins. by 3ins. is admirable and is easily screwed to the model from underneath.

Once completed satisfactorily, one or two little additions can be made as afterthoughts, such as a pennant atop the mast and a name along the bows. These little yachts, easy to make, and yet so decorative, are also delightful and attractive presents.

A Party Game

WITH the approach of party time it is worth while making a note of door games which will help one entertain the gatherings of visitors. Here is one we can reasonably call Dick Whittington's Cat, and the more, within reason, taking part, the merrier it will be.

The game is started off by saying 'Dick Whittington's cat was an amiable cat'. The next player repeats the phrase but alters the adjective *amiable* to another beginning with the same letter—thus, *ambitious, artful, active, agile, etc.*

The next in turn again alters the word to another with the same initial letter, and so on round the players.

When letter (a) has been used right round it is changed to (b) (for such adjectives as *beautiful, busy, bashful*), then again to (c), and so through the alphabet. Any players not supplying a suitable word drop out, and if only a few are taking part it adds to the fun by making it harder to find more words, as each letter goes round twice. Also, when changing to the next letter, it is best for a different player to start off, so each has a chance to get a word in early.

Any youngster still delights in using A PAIR OF STILTS

THE pastime of stilt walking is one of the most ancient in existence, and still retains a degree of popularity amongst the youngsters. A pair of stilts is quite easily made, and uses only a little timber; rather a good thing nowadays. With the confidence gained with practice, it is quite easy to walk upon stilts of a considerable height, but most readers will content themselves with a rise of a few feet only, most likely.

Two distinct patterns of stilts are dealt with in this article, one of a rather original pattern which is just the thing for a kiddie, and which can be explained first. These stilts, as will be seen in Fig. 1, are of the reversible kind, and have two treads each at different heights from the ground, it being only necessary to turn each over to obtain a change of tread.

The Wood to Use

Cut the stilts from 1in. by $1\frac{1}{4}$ in. timber, using straight grained wood entirely free of knots. A matter of 3in. at top and bottom is shaped up for a comfortable grip, but the extreme tips are kept flat to contact the ground. For the treads, seen in the diagram, cut

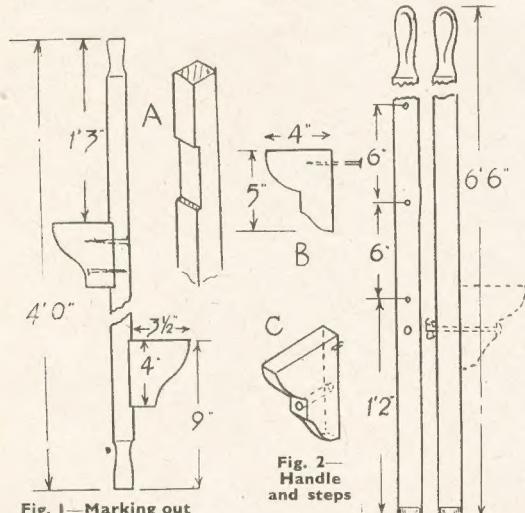


Fig. 1—Marking out

pieces of 1in. thick wood to the shape given. These are fixed to the stilts at the respective distances from top and bottom given in Fig. 1.

Tread Fixing

These treads must be securely fixed, so a recess $\frac{1}{8}$ in. deep is sawn and chiselled out in each stilt, as at (A) for the treads to sit in. Fix each with a couple of screws, one driven in through the stilt into the tread, and the other driven through the tread into the stilt. The screws should be from 2in. to $2\frac{1}{2}$ in. long, and it will be necessary to bore suitably-sized preliminary holes beforehand.

These stilts will just suit a youngster, not being so high as likely to cause injury through a tumble. The question of finish is one for the reader to decide. A coat of varnish would help preserve the wood, or even creosote, which after all being a brown colour does not look too bad. For a present, painting a brilliant colour would add much to the attractiveness of the gift.

Another Type

Fig. 2 shows a pair of stilts of slightly more advanced character, suitable to an older boy. The treads are adjustable from 1ft. 3in. from the ground to 3ft. 3in. and suit the more ambitious lad. They are cut from $1\frac{1}{2}$ in. to $1\frac{3}{4}$ in. square wood, the top being shaped to make for easy safe grip, and the bottom rounded off to about 1in. diameter. It would be a good idea here to fit metal ferrules to keep the bottom from splitting under wear. Rings, cut from suitably-sized metal tube would make useful ferrules.

The treads, one for each stilt, are sawn from 1in. thick wood to the shape at (B), and at the centre bore a $\frac{5}{16}$ in. hole through, seen at (C), for the fixing. On the back edges, at 1in. down from the bolt top of the tread, drive in a stout nail, file off most of the head part to leave a pin $\frac{1}{8}$ in. long sticking out.

Take the stilts, and measuring up from the bottom drill a hole just the size of the pin, at 1ft. 2ins. and four more at distances of 6ins. apart, upwards, as seen in the sketch. (Only three holes are depicted here owing to lack of space.) Now place the treads in turn with their pin in each hole, and while there place the drill bit, a $\frac{5}{16}$ in. one, in the hole in the tread and continue the hole through the stilts.

A pair of $\frac{1}{8}$ in. by 4in. bolts, complete with wing nuts and washers will be required for fixing the treads in the chosen holes. As will be seen the job of changing the heights of the treads can be done in a minute or so without any trouble. Finish can be added to choice, but a coat of varnish will probably suffice for most readers.

A helpful addition is a rubber tip to the bottoms of the stilts; it prevents slipping and lessens jars. A pair of rubber heels of the revolving pattern would serve, but any thick discs of the rubber would do, as long as the nails used to fix them are sunk below the surface. Rubber feet or doorstops, such as can be bought at



most hardware shops, would serve also; a single screw fitting holding them securely enough.

For Short People

Short lads, trying out the longer stilts, may find the shaped handle at the top awkward to grip when the low treads are in use. In such a case the stilts could be rounded a little at those parts where it is most convenient to clasp them, as long as the flat face on which the treads will press higher up, is still maintained. Only the sharp corner angles need be rounded to make the grip a comfortable one.

Luminous Paint

I WISH to make some luminous paint, please could you tell me how? (K.T.—Newport).

THE following is a practicable formula for a luminous paint. Thoroughly mix and heat to 1,300 degrees centigrade, 100 parts by weight of calcium oxide, 30 parts of sulphur, 10 parts starch, 5 parts of a $\frac{1}{2}$ per cent solution of bismuth nitrate, $\frac{1}{4}$ part potassium chloride, and $\frac{3}{4}$ part sodium chloride. When cold, add the powdered product to a clear varnish to form a paint.

For use and appearance fit the railway layout with MODEL TUNNELS

TUNNELS on a model railway can be put to a very definite use other than just being put there 'to look like the real thing'. In fact they can be put to several jobs of work, much depending on the sort of line you are running.

In the main, these uses are all tied up with increasing the illusion of track-length—a thing which all enthusiasts should try to do. For model tracks, even the best, are really very short, and everything possible should be done to get as far away as possible from the impression that the trains are just

rail switch can be made to work automatically. An ordinary point is made with the blades working rather easier than usual. This is then held by a light spring in the straight position.

very unreal. This localizing of sections incidentally is one of the secrets of success in model railway scenic effects. An apparent increase in the length of the track is further gained by this treatment.

Spring Points

Entering the tunnel, the train thus carries right on, and on coming round is able to 'trail' through the switch without coming off as the blades just pushed over far enough to allow the flanges to pass through. Once the train has passed, the blades are pulled by the spring back to the straight position. The whole of a tunnel like this should be masked with brown paper or cloth or some other covering so the trains are quite hidden but can be readily got at in case of a derailment inside.

Short tunnels are useful to separate two stations that are very close together. In actual practice you would not see a station with another one only a few hundred yards further on. But sometimes it is convenient to do this on model lines, and it can

Dummy Entrances

Tunnels also can be dummies and still help the layout. The idea here is to have a line running into a tunnel entrance and stopping as soon as it gets inside. Trains cannot, of course, be run on this section of track, but the impression to the onlooker is that a line disappears away to some far distant place and although no train is ever seen coming along this particular track, the mind does not query the point too much. If the dummy entrance is made with a few inches depth a locomotive can be effectively left standing with its front end just protruding and seemingly being held up by an adverse signal.

In Wood or Card

A tunnel can be very helpful where it is necessary to bring a train back and past a station it has just left, but stay behind it. Fig. 1 (F) shows the idea. The station is well in view of the spectator and sharply behind this rises a hill of brown paper or other material under which speeds our train, invisible to anyone looking at the line in front.

Tunnel mouths are extremely easy to make. Wood can be used, but stiff card will do quite well. The mouth may be the complete inverted arch, but the three-quarters circle, as indicated in (A) Fig. 2, is very effective. If of cardboard, then a white type should be used upon

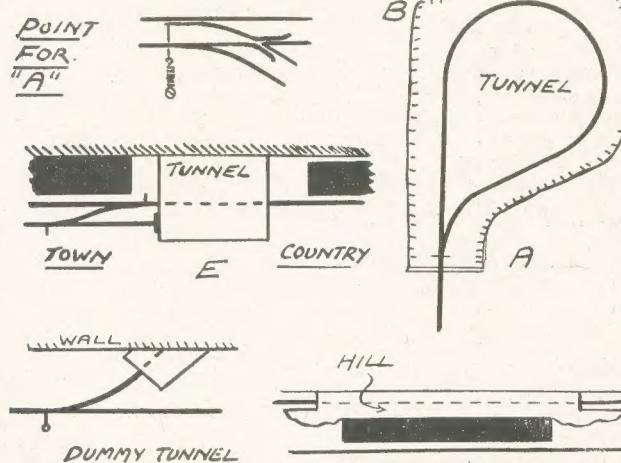


Fig. 1—Some examples of track layout and tunnels

running round a circle—even if they are.

And it is in the breaking down of this impression that tunnels are so useful. Look at Fig. 1. Here a line has to finish at (B) because there is no more room. You could have a station there into which the trains just run, stop and then come back. But if this position is not very far from the beginning station the line is going to look really very short.

In and Out

A tunnel here will do all that is necessary in giving the impression that the line goes on indefinitely. Set a little distance from the end, a line can be made to go round in a complete circle and come back again to the tunnel mouth. Thus the train leaves your main station, enters the tunnel and emerges, to all purposes, a few seconds later as a new train coming in the opposite direction—an illusion which would be quite lost if the train was seen making the turn round.

For this operation it is best to have a scale-model rail switch at (A). With a tin-plate point you would have to alter its position quickly while the train was on the circle inside the tunnel or there would be a derailment. The scale-model

be done with quite good effect if there is a tunnel between the two, running through a fairly high 'hill'. The hill can be made with paper or can, with good effect, be some real obstacle—say row of books (the trains running underneath).

A tunnel like this is useful, too, for a quick change in character of the line. Thus as shown in (E), Fig. 1, the left side of the division might be a busy station made up with a back-scene of town houses and factories while the right suddenly becomes pure countryside.

Without the division, the sudden change from city to country would look

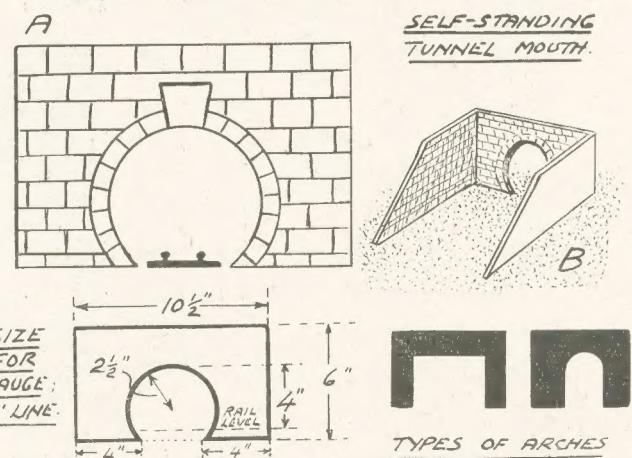


Fig. 2—Constructional details of various types

which the stone courses are marked in Indian ink. Wood must be first painted grey and then lined in with a fine brush containing a black paint. On the whole, card is quicker for rapid marking in and really makes quite good frontages.

Continued foot of page 202

How to fit your front door with a novelty MUSICAL LETTER BOX

It often happens that when something is put in the letter box we know nothing about it until, perhaps, hours afterwards. With the aid of the little gadget described here we know at once when the letter box is being opened and closed by means of the musical notes that it emits.

Many of us are familiar with the cute little cuckoo clocks that came from Germany before the war; the same idea has been adapted in the making of this musical letter box. When the box is opened we hear 'cuck' followed by 'koo' as the flap closes again.

The apparatus is quite easy to make and it can be adapted to fit any type of letter box. It consists of two small wooden pipes like those to be found in a church or cinema organ, each one of which is blown by a small bellows and the whole is enclosed in a small case.

The Pipe

Commence by making the small pipe. No trouble should be experienced provided a little care is taken to get the wood cut true to the measurements. The best wood to use for the pipes is mahogany, straight grained and free from knots. The length of the pipes determines the note produced, therefore,

in order to get the 'cuckoo' notes, one pipe must be 6ins. and the other 5ins. long.

Both pipes are made 1in. square external measurement, and as the wood used is $\frac{1}{8}$ in. thick the foundation blocks marked (E) in Fig. 1 will be $\frac{1}{8}$ in. square, the length being $\frac{11}{16}$ in. Make these blocks first, then the pipes can be built round them. Select a nice piece of mahogany for the job, cut out a $\frac{1}{4}$ in. slot in the centre, and drill a $\frac{1}{8}$ in. hole in the base and leading to the slot. This is the wind passage from the bellows.

The Front

The top part of the block is slightly less than $\frac{1}{8}$ in. in depth—carefully glasspaper to reduce it by about $\frac{1}{16}$ in., leaving a clean sharp edge along the top.

From a piece of wood 1in. wide and 5ins. long for one pipe and 4ins. for the other, we can now cut the front part, which contains the lip, as shown at (A) in Fig. 1. This must be cut very carefully and the time spent in making a good job will be amply repaid by the result.

The centre $\frac{1}{8}$ in. is tapered off from about $\frac{1}{8}$ in. until it is practically a knife-edge at the end so as to form a lip. Chisel it first and then finish with a very fine glasspaper, leaving the edge perfectly level and clean.

Next cut two sides for each pipe $\frac{1}{16}$ in. wide, the length being 6ins. and 5ins. respectively. The backs are the same lengths, but are 1in. wide. We are now ready for gluing up. The sides and back are stuck to the foundation block, making sure there are no cracks left for the air to escape through.

Capping Piece

When dry, glue on the cap, which is a piece of $\frac{1}{8}$ in. mahogany $\frac{11}{16}$ in. long and 1in. wide. See that the glue does not ooze out and fill up the air gap at the top. Next glue the pipe front on, leaving a gap of about $\frac{1}{16}$ in. between the top of the block and the lip edge. The pipes can be tested by gently blowing in the $\frac{1}{8}$ in. hole in the block.

If they do not sound the correct notes they can be turned by cutting a piece off the open end. This will produce a higher note. By stopping up the open ends with a plug of wood the note produced will be an octave lower, and the pitch may be altered by sliding the plug in or out.

The Bellows

The bellows must be made next, two pieces of wood being required for each—3ins. long and 2ins. wide and $\frac{1}{8}$ in. thick. The wood can be of any kind. The four

corners are cut off each piece to a distance of $\frac{1}{16}$ in. and one piece has a $\frac{1}{8}$ in. hole drilled $\frac{1}{16}$ in. from one end to correspond with the hole in the block (Fig. 2). The other piece of wood does not have a hole but the hinged end is tapered off, as shown (Fig. 3). The reason for this will be seen when it comes to assembling.

Folding

The next process needs to be done carefully if accuracy is to be achieved. It is the folding of the material used for the sides of the bellows. The correct and best material is thin white leather such as is used for organ bellows. If this is too expensive or you have any difficulty in getting it you

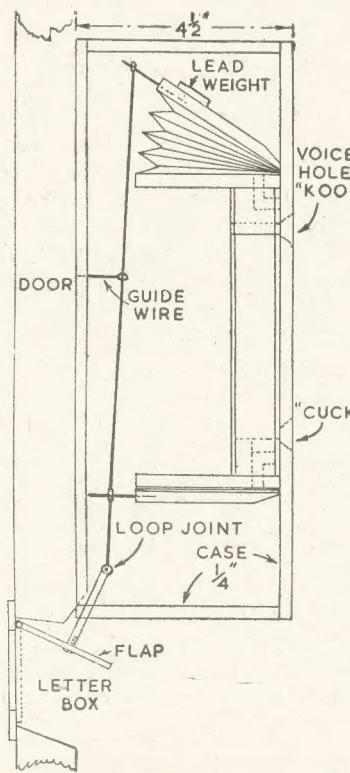


Fig. 6—Sectional view showing mechanism attached to box flap

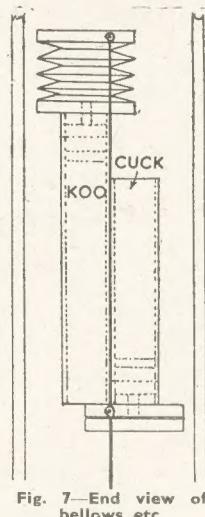


Fig. 7—End view of bellows, etc.

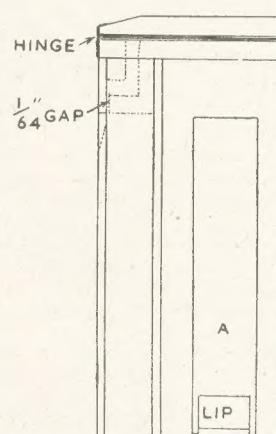


Fig. 3—Bellows flat on pipe

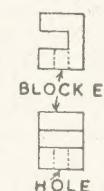


Fig. 2—Bellows ends

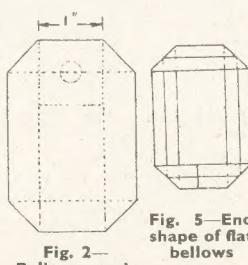


Fig. 5—End shape of flat bellows

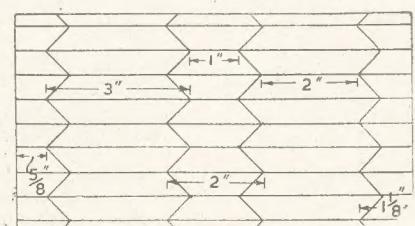


Fig. 4—Marking for bellows shape

can use white drawing or cartridge paper. It will be somewhat stiffer but will get easier with use. It will fold much easier but will not wear or last so well as leather.

For each bellows you need a piece 8½ ins. long and 4½ ins. wide. With a pencil, rule parallel lines lengthwise; the outside ones are ¼ in. from the edge and all the remainder are ½ in. apart. Then put in the four zig-zag lines from the measurements given in Fig. 4.

Concertina Folds

We are now ready to fold the material to form a concertina box, as Fig. 5. The two ends will overlap ½ in. and are glued together. The method of folding is a job that is difficult to explain on paper and the easiest way is by experimenting with an old scrap of paper. Once you have got the idea the folds will just drop into place quite easily.

When folded correctly, place under a heavy weight for a time to get it nicely creased. The ½ in. end folds can then be glued and the end blocks placed in position. Do not miss any parts or the air may leak out, but do not flood the glue on and stick up the folds. A strip of leather 1 in. long should now be glued on to one end of the bellows to form a hinge. At the same time the bellows can be glued to the pipes.

The entire mechanism is enclosed in a light wooden case, 12 ins. long, 4 ins. wide and 4½ ins. deep. The wood need not be

thicker than ½ in. The two pipes are fastened side by side on to the back of this case, the 6 ins. one with the bellows at the top and the short one with the bellows at the bottom. Glue is the best way of fastening, then there will be no nail or screw holes for the air to leak out of.

Before gluing, cut two small holes to correspond with the voice holes in the pipes in the case back. One side of the case can be made to screw on so as to be able to make any necessary adjustments. It would also be an advantage to screw the back on the case; it will then be possible to screw the case on to the door securely before assembling.

To Letter Box Flap

Now we can fix the bracket on the letter box flap to work the mechanism. A piece of brass or iron rod about 1½ ins. to 2 ins. long is screwed on to the flap with a neat round-head or countersunk screw.

The other end of the rod must be slotted to take the looped end of a piece of 16 gauge wire. A hole is drilled and a pin fitted to give the necessary swivel action. A short distance from the bottom of the wire a loop is made to take the wire on the lower bellows.

The wire then goes to the top where a similar loop is made to work the bellows. The exact position can be seen from Figs. 6 and 7. A little experimenting will

be needed to get the wire the correct length and the loops in the right positions. A looped guide wire is fitted to the case for the operating wire to slide up and down in.

The Action

When the letter box flap is closed the top bellows will be closed and the lower one open. The act of pushing the flap open causes the bottom bellows to close and emit the note 'cuck'. At the same time it opens the top bellows, which, when the flap is released, falls by its own weight giving the second call of 'koo'.

It may be necessary to fix a piece of lead on to the top bellows to make it fall at the right speed. The sound 'koo' should be rather drawn out and not short and snappy.

The finishing of the wood work of the case must be left to your discretion; it can be stained or painted to match the door.

Vertical Alternative

The mechanism described here is designed for a horizontal letter box, but it can be adapted to work from a vertical type one. These are usually hinged at the side like a door. All that is necessary is to incorporate a right angled pivoted lever to alter the direction, and this should not present any difficulty to the handyman. Otherwise the mechanism is as made for the horizontal type.

Make the Mighty ANZOFF!

It is frequently necessary for the hobbyist to leave some piece of work undisturbed. It may be a model that is wet with paint or some pieces being glued under the pressure of weights. All too frequently, the lady with the duster disturbs these, and a pencilled note imploring 'Please Do Not Touch' is often overlooked.

In such cases we must let Anzoff take over and warn people, in an amusing and inoffensive way, to keep their hands off. He is a plywood cut-out, gaily painted, always ready for any job.

It is first necessary to make a full size pattern by enlarging the diagram given. Rule your paper in 1 in. squares with letters and numbers as shown. It is then

easy to enlarge, square by square. For example, the (N) of Anzoff occupies square (2B) and the eyes are at the tops of squares (4D) and (4E). The pattern is just in outline, of course.

When the pattern is ready, it is traced down on to clean plywood about ½ in. thick. The outside grain should run vertically. The shape is then cut out, i.e., the panel with the top part of the Terrible Tartar's head.

It might be mentioned that it is best when the complete pattern has been made, to trace only at first, the outline on to the wood. Further details can be traced down as required.

After cleaning any ragged edges, give a coat of any light flat paint as an under-coat and then, when this is dry, paint completely over the face (ignoring the eyes and nose) in a ruddy tint (white, yellow and a little red). Heighten the colour of the cheek bones, and get a deeper colour where eye sockets will come. When this is dry, trace off the facial features.

These can be painted in dark brown, and when the nose is better defined, it can be reddened at the end. Now paint in the hat. White with blue and red will give a light grey. Paint the panel bright yellow, and when dry, add the whiskers and hair. It would not be good technique to paint in the whiskers first and then bring the yellow of the panel up to it.

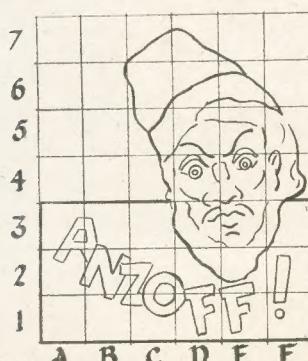
Finally the word ANZOFF is added in black. The back and edges should have



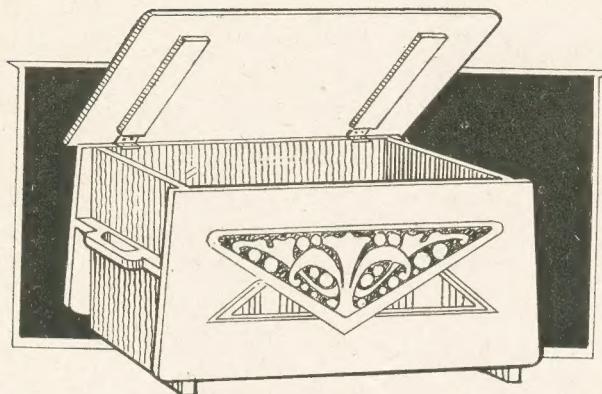
been painted in eggshell black like a cut-out calendar.

Apart from this specific use, the idea can be used in other ways, especially for window display. Instead of Anzoff's uncompromising features we can have a picture of a milkman, chauffeur, young man in a smart hat, etc., and use them, respectively, for signs with suitable slogans, advertising a dairy, garage (or car hire service), a hatters, and so on.

The non-artist reader may find suitable designs in newspaper advertisements or actual enlarged photographs can be used. But take care that you do not use material put out, for example, by Messrs. A Car Hire, to advertise Messrs. B Car Hire!



Keep a supply for the fire handy by making A WOOD LOG BOX



WE all know during the dull wintry evenings how welcome is a brightly-burning fire, and how a good dry log or chunk of wood helps to brighten. A convenient box kept at hand proves a useful and necessary piece of furniture.

The decoration on the front of the box (see Fig. 2) is a simple piece of work carried out in relief carving which should not prove too difficult even to the amateur.

A word may be added as an idea again for the panel. Instead of cutting in and carving the work actually from the wood of the box, try cutting a separate overlay from, say, $\frac{1}{8}$ in. wood, to some such simple design as that shown here and glue this to the front of the box. By 'matting' between the frets of the design, a very bold and attractive effect results.

A general view of the finished box is given in Fig. 2, and from this it will be seen how the front and the back of it are made to project beyond the ends with rails between to form suitable handles. Fig. 3 is a sectional view of the box, showing the internal dimensions as being 16ins. by 10ins. and 10ins. deep.

The sides are shaped from pieces of $\frac{1}{8}$ in. stuff 20ins. long by $10\frac{1}{8}$ ins. wide. The shaping at the ends of the boards is so simple that it can be got from the measurements shown in Fig. 3. This diagram also shows the relative position and measurements of the sides with the ends of the box.

The actual shaping is carried out with the fretsaw and all edges cleaned off afterwards with glasspaper. The cut-out side should then be laid upon the second piece of wood and a line drawn round in pencil so that both may be identical. The carving to the front of the box should, of course, be

carried out before the parts are assembled.

This carving is done with gouges and the matting tool with, perhaps, one or two carving and vee tools and an ordinary pocket knife and a matting tool. A three-point matting tool is chosen so small surfaces and corners can be negotiated. The

screws run through from inside the ends. Screws could also be run through the sides of the box into the end grain, the heads of the screws being finally puttied up or filled with glue and sawdust.

The lid should be made up from two pieces of planed wood glued jointed together. If one piece of stuff is used the full width shown in Fig. 5 it is liable, unless a thoroughly well seasoned piece of wood can be obtained, to warp and twist out of shape. If, however, a good glued joint cannot be made, it is recommended to place on the underside of the lid two stiffeners, consisting of, say, 2ins. by $\frac{1}{8}$ in. stuff. Glue and screws should be the fixing here.

The Lid

The measurements of the lid are given in Fig. 5, and it will be noted that the corners are rounded off neatly and made smooth with glasspaper. The cross stiffeners may have their top edges chamfered if desired to get a neater finish. Note also that the stiffening battens must be placed so they fit comfortably inside the box when the lid is closed.

It remains to screw on the hinges and see the lid is placed squarely on the box. To keep the box raised slightly from the floor the ends project beyond the floor and the sides. Although the lid projects slightly beyond the front surface of the box, it would be advisable, perhaps, to screw on a shaped handle piece on the top of the lid, to facilitate lifting.

Oak would be the ideal wood to use for the box but at the same time good pine or American whitewood is quite as suitable.

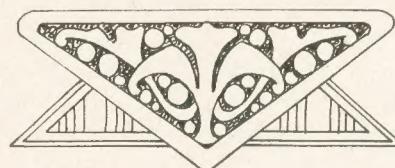


Fig. 2—Suggested panel decoration

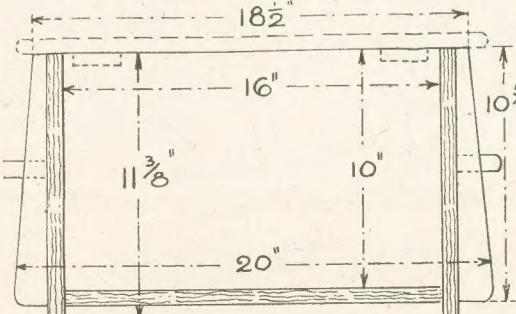


Fig. 3—Side elevation of box

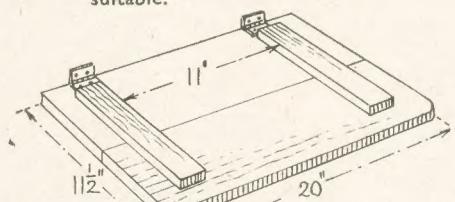


Fig. 4—Under view of lid

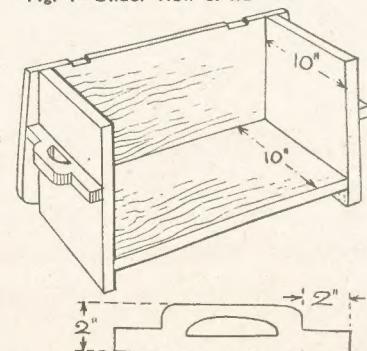


Fig. 5—Construction of box and handle

Users of camera, microscope or episcope should know WHAT LENS NAMES MEAN

READERS who buy new or second-hand cameras or are making episopes, lanterns, etc., are perhaps being puzzled by the names given to lenses in advertisements describing various instruments. There is really nothing to be afraid of in these names, despite the fact that they are rather fierce-sounding. Let us see just what they mean. Lenses all fall into one of four very distinct classes as follows:—(1) Meniscus, (2) Meniscus Achromatic (with other achromatics), (3) Rapid Rectilinear and (4) Anastigmat.

Very inexpensive cameras have a simple piece of glass shaped like a saucer (which is what 'Meniscus' implies). This is a Meniscus Lens and gives a sharp image from corner to corner of the film when quite a lot, comparatively speaking, of the lens surface is used.

For Microscopes

Lenses for microscopes, which have both sides curving outwards, require a curved surface on which to throw the image if it is to be sharp from edge to edge. Then can be used for cameras if only a very minute area in the middle of the lens is passing rays. This is effected by putting a mask or 'stop' in front. With Meniscus a larger proportion of glass can be put to useful work, thus giving better exposed pictures.

Meniscus, however, will only do with box cameras set by the makers, and not for focussing cameras. For, no matter how carefully you focussed on the ground-glass, your picture would never be sharp. This is because the colour rays that affect the sensitive film are not quite in the same position as the visual ones which affect the eye. Manufacturers allow for this by placing the lens a certain mathematical distance from the apparent position of focus.

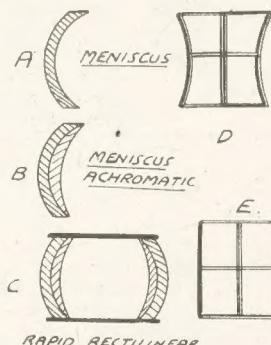
For Focussing

In 1752, an English optician found that by combining two glasses he could overcome this trouble, but still retain the Meniscus shape. Thus we get the Meniscus Achromatic or Meniscus lens that has been 'corrected' for colour and which can be used with a focussing camera.

This colour-corrected lens has still one

defect, however—it slightly bends vertical lines. That is to say if you photographed a window the sides would look as figure (D)—exaggerated for clarity. This does not matter in subjects like scenery, figures, etc., but is rather unpleasant if taking buildings or anything that has plenty of vertical lines.

However, it was discovered that if you place two Meniscus Achromatics facing one another they cancel out the curvature and so produce an image in which parallel vertical lines are truly parallel



from edge to edge, as (E). This lens is spoken of as 'rectilinear'.

The word 'rapid' comes in because the focal length of the combined lens is only half of either component taken separately and shorter focal lengths pass more light. In this case the two lenses together only require a quarter of the exposure of either taken singly. Thus, in truth, the final lens is very rapid. These lenses are often in advertisements just called 'RR'.

Rapid Rectilinear lenses are sometimes given trade names as Rapid Aplanat, but where you see the word 'rapid' you may know that a rectilinear is meant.

The Anastigmat Lens

Lastly, we come to the Anastigmat lens. Meniscus, Meniscus Achromatic (with other achromatics) and Rectilinear can all be obtained on medium-priced cameras but there is always rather a jump in price when the lens is Anastigmat. The lenses mentioned help to do away with the curved field, the colour trouble and the non-parallel verticals, but only if a comparatively small area of their centres is used.

Model Tunnels—(Continued from page 198)

A self-standing tunnel entrance can be made by bringing out two side wings (B) Fig. 2. Marked with stone course these look like the cutting walls one often sees when approaching a tunnel.

To give a good effect the 'ground' coming up to the tunnel must come nicely to the edge of the stonework without gaps. To effect this the paper used for the 'ground' should be carefully gummed or be held with pins just along the top of the card or wood forming the

entrance.

Many tunnels are quite spoilt from a scenic point of view by the backing 'hill' not properly meeting them. Where the line goes straight into the side of, say, a case or box, this trouble will not arise as the frontage can be glued straight to the wood. A box, incidentally makes a very good division for between stations, the train going in at one side and out the other. The box is inverted and its top can be used for books, tools etc.

If we tried to take a photograph with the full area of glass all the faults would return. This using of the centre of a lens only, however, is awkward because it means that a really short exposure—that is say a one-thousandth of a second—can never be given. Or from an amateur's point of view, the small stop means that photography must be limited to quite bright days only and never late on in the evening.

Edge Sharpness

About forty years ago two scientists of the names of Otto and Abbe, working in conjunction at Jena found out how to make a new lens which gave all the desired characteristics when practically the whole of the lens surface was used. In particular their new lens gave edge-to-edge sharpness when used fully open. The fault of an image only being sharp in one part and not in another is known as 'astigmatism', and it is a thing that the human eye can suffer from.

Otto and Abbe's lens cured this trouble and so they were termed 'An-astigmats'—'an' meaning 'against'. The word thus means 'against astigmatism'. The new lens also included the use of a new type of optical glass and this it was found gave a very fine definition, better than that given by older forms of glass.

For Speed Pictures

So we see then that an Anastigmat lens gives a flat image at a 'big aperture' thus allowing speed pictures to be taken and photography to be carried on in dull weather and that it incorporated all the characteristics of colour correction and parallelism. Also it gives superior definition. In short, it is a pretty ideal lens, but more expensive than other types, although cheaper Anastigmats are now being manufactured.

When buying a second-hand camera always, of course, examine the lens. Small bubbles in the glass look frightening but are nothing to worry about. The only thing that really prevents a lens from doing its job properly is a badly scored surface, even though the scratches are quite tiny. Minute, but plentiful abrasions upset the refraction of the rays passing through and make the image blurry.

Finally, always have the track really well laid in any tunnel, for derailed vehicles inside are not always easy to get at, although short tunnels can be made to lift off.

If you have not yet made a layout for model railways you should commence now. It is a fascinating hobby, particularly if you can afford the space to have the track and layout permanent. Articles on the subject have been appearing periodically in these pages.

Books to Read!

Afterdinner Science

by Kenneth Swezey

THE word science is one which very often frightens by its suggestion of cleverness and wonder—by learned people working out endless mathematical figures or delving enormously into unknown scientific material. But, after all, science can be simple and entertaining—as this book shows. The author deals with scientific experiments with no wider apparatus than you would find at home, and with such apparatus, clearly and easily proves scientific facts which would involve mental stress if worked out with their usual laboratory exactness and knowledge. A large clear photograph occupies most of the page and under it a simple explanation of the way science is working. The fellow with a table fork in his mouth is hearing with his teeth (and why), a postcard is holding water, being boiled with a match. All illustrate a fundamental principle, explained and illustrated in everyday language. Over a hundred simple home tricks are shown which can entertain, amuse and instruct without boundless knowledge or involved apparatus. A book of equal interest at any age, and one both intriguing and entertaining.

Published by Nicholas Kaye Limited, 1 Trebeck Street, London, W.1—Price 15/-

one's individual artistry and creative opportunity can be introduced into the subject. Having explained how to begin, with the tools enumerated, the author shows exactly how the work is done. Simple work is undertaken, gradually proceeding to larger and more elaborate jobs. Handbags, gloves, bookbinding, etc., are all dealt with finally with illustrations and details which make any reader more enthusiastic than ever about the work.

Published by C. Arthur Pearson Ltd., Southampton Street, London, W.C.2—Price 5/-

Period Ship Modelling

by R. K. Battson

JUST the book so many readers have been looking for to help them with those galleons they are making from the Hobbies designs. The author is not dealing with one particular famous ship but with general details of a galleon of the Elizabethan period. He gives very sound advice to the beginner, and, we are glad to see, stresses very strong the need for accuracy, and the best work. What is more he tells you how to

Here are some short reviews of recently published books, which are likely to be of particular interest to readers. Copies are obtainable from booksellers or direct from the Publishers, if you mention *Hobbies Weekly* when writing

obtain it. An enormous and, perhaps, too much detail is incorporated in some of the constructional work, and patience and time must be added to ability to follow all the suggestions. In the end, however, there is, no doubt, a magnificent model would result—even if it took, as the author suggests, two or three years of spare time. But, undoubtedly, the book is full of illustrations and hints which would be of assistance to those making the old time ship models from the kits which Hobbies Ltd. provide in a wide range.

Published by Percival Marshall & Co. Ltd., 23 Great Queen Street, London, W.C.2—Price 3/6

Some Classic Locomotives

by C. Hamilton Ellis

WE imagine there is sufficient controversial matter in these pages to warrant long and heated arguments among those thousands of enthusiasts who have a surprisingly wide knowledge of our railways. Nowadays we are gradually getting uniformed to one style only. Gone are the early days of the century when the hundreds of

A Combined Effort—

WHAT delight there must be in making this original village; what further delight for the youngsters who can play with its Lilliputian parts! Look at the wonder of the five-year-old on the right—surely a dream come true for her. The miniature village was built by Mr. Raymond Palmer (of Firgrove Rd., Southampton), in his shirt sleeves in the picture, and was the result of four years work. To complete it realistically you have the travelling circus ambling along the village 'street', complete with wagons, side-shows and animals. That part of the work was done by Mr. Wise of Fernlea Gardens, Southampton, who is seen on the left of the picture. The circus took two years to build.



Leatherwork

by L. Johnson

THERE is a never failing interest in leatherwork for decorative as well as utility purposes, and it is being done more and more by our readers as the necessary material becomes more easily obtainable. This book is one of the popular Home Handcraft Series, and should appeal to a large number—whether as a beginner or the more expert. There is something very pleasant in working in this material, and apart from the actual enjoyment of craftsmanship,

railway companies operating could vie with each other in colour schemes, types of engine, schedules, service, etc. After the first War we had the grouping, and now after this war, nationalization. But many will have nostalgic memories of the locomotives and rolling stock which formed such a part of their local lives. The famous Stroudley locomotives of the old London, Brighton and South Coast; the celebrated expresses of 1869 when the St. George of Joseph Beattie pulled along on the London and South-Western route; the various successes, trials, and results of the 4-6-0 type. All these classics are dealt with in the entertaining and informative manner we expect from such an expert as the author. The facts are interesting, the colour prints are delightful, the photographs helpful and the chapters comprehensive. A veritable mine of information offered in a pleasant way.

Published by George Allen and Unwin Ltd., 40 Museum Street, London, W.C.1—Price 21/-

* * *

craftsmanship is being killed by the monstrous production of machine output, and it would be tragic indeed if all our early abilities were allowed to fade. This book, then, is written with a suggestion for even another practical pastime. Its author is an instructor in the art, and passes on his knowledge in clearly written and illustrated chapters. They deal with material, tools, processes, range of work, and results to obtain, so that the would-be worker advances by practical steps in the job.

Published by Vawser and Wiles Ltd., 356/358 Kilburn High Road, N.W.6—Price 7/6

* * *

undoubtedly, provide fun both in making and use.

Publishers Ellison Hawks Ltd., Victoria House, Southport—Price 2/9 post free.

Movie Making for Everyone

by R. H. Alder

If you have never given thought to what a fascinating hobby amateur cinematography could be, this book would certainly give you much to think about, and probably lead you to join that rapid increasing band of enthusiasts. The author has enjoyed it for 20 years and covered all the spheres of activities during that period. He explains in the book first the general theory, the actual taking and then the showing. In every case the matter is written essentially for the amateur, and technical details are omitted or quite simply explained. The chapters deal very thoroughly with the whole process—exposure, script, light technique, editing, tricks, projection and programme. And in the last chapter, he adds what so many authors overlook—and that is the financial cost of running such a hobby. A helpful book such as this will, undoubtedly, induce a number of amateurs to be really keen. And they do not need to be practising photographers either, because, as Mr. Alder points out, film-making and photography are not branches of the same hobby. He shows how enthusiasm can grow without any previous knowledge of either.

Published by The Fountain Press, 46/7 Chancery Lane, London, W.C.2—Price 6/-

Brushmaking by Hand

by Albert Tibbs

FEW readers had probably given a thought to the possibility of brushmaking as a hobby, but there is no reason why such a craft should not make an appeal. Proof of its usefulness is obvious after even a minute's thought—and the work is becoming more widely undertaken in handicraft centres, occupational therapy centres, etc. There is, no doubt, too, that much of the old

Toys we make at Home

A LARGE number of readers are always interested in simple toy making and this is a book we can thoroughly recommend. It is sound value, because although originally sold for 5/- the publishers are making a special offer to readers of *Hobbies Weekly* for 2/9 post free. It has all kinds of ingenious little novelties, the making of which needs only everyday bits and pieces such as cotton reels, small parts of wood, wire, string, pegs, etc. Each page has a clear illustration and concise details for construction. There are no large or elaborate toys, but simple and ingenious little novelties such as a climbing monkey, fun with nuts, various uses for cotton reels, balancing tricks, etc. None of which need take long to make, but which,

From the Editor's Notebook—

HERE'S another reader with interesting things to tell of how he commenced 18 years ago when he was 14 years old and is still thoroughly enjoying his *Hobbies*. Mr. A. Whysall, of Kiveton Park, Sheffield, first bought his fretwork set for 1/-, having saved two weeks' pocket money to do it! Later he bought a 30/- Outfit, and last year went in for a Gem Machine. 'The best money I spent', he says, 'was when I purchased it, for the jobs that can be done with these machines is amazing'. You're telling me!

* * *

ONE of the activities of the Rotary Clubs all over the country is holding *Hobbies* Exhibitions, covering a wide range of work and craftsmanship. Such Exhibitions are well organized and we hope any reader who knows of one coming along will give his best support. Do not be afraid to offer your services as well as your work, because it all helps to increase craftsmanship and fellowship.

* * *

I SOMETIMES wonder what really is the limit in age of those who enjoy a hobby. I think you can cut out the baby who plays with his toes as a pastime, but it must be soon after early years that most people start a hobby of some kind.

A number of readers I know who are under 10 seem to have a genius for clever craftsmanship. At the recent Model Engineering Exhibition in London, I see a boy of 14 was responsible for a model of our Stage Coach and Horses, and at the other end of the scale a retired naval officer of 87 has built a 32-gun frigate. Rather a coincidence, isn't it, that young and old find delight in the beauty and symmetry of those old time vehicles?

* * *

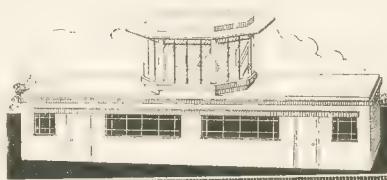
MANY readers who made our popular model of the Old Time Stage Coach have made it more realistic still by adding horses, driver, coachmen, etc., in position. Some have gone even further still, for Mr. J. Burrows of 18 Almuda St., Islington, London, tells me he has turned up a little post horn, and gilded it; got a whalebone whip which tapers from lash to handle, and

provided a little tube as a whip socket in its proper place! I have really ceased to be amazed at the realism which some of our craftsmen add to their models. Not satisfied with the details provided on our plans they go to no end of enjoyable trouble to add everything that should be there to make the article true to life. It's really great fun, finding out these authentic particulars from books and museums and carrying them out on the model you are building. Such originality and enthusiasm and ability prove the real craftsman.

* * *

THE modern Signal Box illustrated here is one of the two models which can be made for a Gauge O railway system from the patterns and instructions presented with this issue. The other model is of a realistic footbridge, and together they form the second sheet in the series being published. We have already had the Station and with those to follow, the model maker will have a comprehensive and realistic lay-out for his railway. The Kit (No. 2826) for making the Signal Box and Footbridge costs 9/9 at any *Hobbies* Branch, or 10/6 by post from *Hobbies* Ltd., Dereham, Norfolk.

The Editor.



A number of things the handyman can do for BATHROOM IMPROVEMENT

UNLESS the house is very modern there may be some practical improvements you can make in the bathroom, provided you can get the materials and work out what you intend doing beforehand. There is quite a bit of space wasted in the old type average bathroom and this can be utilized to good advantage. Enclosing the bath is also a very sensible idea.

In some cases the bath is about 1in. to 2ins. away from the wall, but this can be covered in if you first of all fix a batten of 1in. square wood along the wall just level with the top of the rounded edge of the bath. As you will be fixing some panel board on this fit two 'legs' to stand on the ground behind the bath. You can make it four if you wish, so that the downward thrust will not force the batten from the wall.

Bath Cover

In Fig. 1 is shown this framework without the bath in position. Note that the frame comes along the two ends as well with a flat piece at the base, to take the panel board. The front of the top part of the bath rim is left uncovered, but in the long side and two short ends it is planned to come to the centre of the rim. This ends just after the main curves on each side.

Follow the detail in Fig. 2 carefully, because this is planned so the side facing outwards comes under the bath and not flush with the top of the bath. This has a special advantage because a person,

perhaps bathing a child can then stand with the feet under the bath. Many of the boxed-in types do come out the full width and are, for that reason, not popular.

Hardboard is now more plentiful, off permit and ideal for all such jobs due to its strength, size and toughness. This is what we suggest you use for this improvement. To finish off round the top use 1in. quarter-round beading as shown. Panels (A) and (B) are cut to fit the frame and then follow the slope of the bath.

A Drawer

This will then leave a fine space, probably 3ft. long and the depth the same as the width to the wall and about 6ins. deep. Such space will make drawer room. Make the sides in 1in. wood and the base in panel board. Fix two runners on the floor to keep it straight. You can neaten the fitment by bringing the front up slightly higher as in Fig. 3. Small ball runners can also be fitted.

This fitment now allows another space to be used, which, when made, will take all the odd jars, pots and other items mostly spread all round the bathroom. It is a simple stand-up cabinet to fit on the space provided at the head of the bath. It can be made from 1in. board and divided as shown. Two sections can be covered in with a sliding door.

Space will govern the size, but something about 2ft. wide and 18ins. high would be about right. A small beading round the top would enable bottle and other sundry items to be stored. Fig. 4

shows a suggested design, but the worker can alter this to suit his own tastes.

Pipe Covers

We often come across the bathroom which may have been converted from a bedroom. In this case unsightly pipes are shown with the usual encrusted dirt and dust. These can be cased in as shown in Fig. 5 but it is wise to make the parts so they can be unscrewed and taken away in case of repair work. Alternatively, space permitting, one can make the fixture as in Fig. 6, when the lid part can be hinged in sections and the space in front used to hold tins and jars. There are some parts of most bathrooms where this can be done and a lining of lino put on the top to finish it off.

The Basin

Finally, we come to the wash basin. Undoubtedly, this can be one of the ugliest parts, with its waste pipe, brackets (not always very ornate), and yet with a little designing it can be very attractive.

In Fig. 7 we show the suitable framework from light wood. One word of warning: be careful not to smash something or damage any pipe connections. Make the frame in sections, try it out and make sure it all fits. If properly made it should nearly hold itself together. Note, again, you must provide a cut-away for the feet. Space underneath will not be great because of the pipes but there should be room for one shelf. The whole front section should be made to screw in and thus save difficulty if you meet trouble.

To hold such fitments firm you will find $\frac{1}{2}$ in. quarter-round beading on the floor will improve the finish and tidy up the edges.

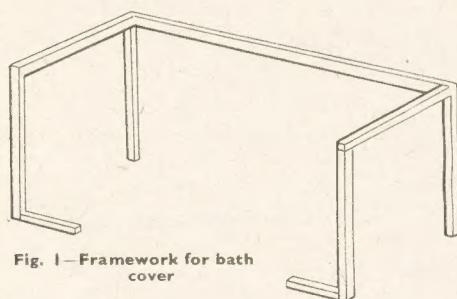


Fig. 1—Framework for bath cover

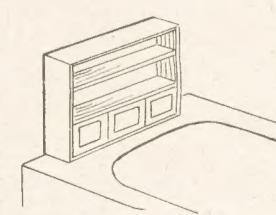


Fig. 4—Bath top cabinet



Fig. 7—Under basin cupboard

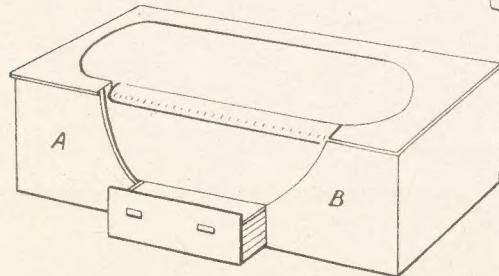


Fig. 2—Bath cover and drawer fitment

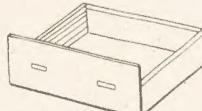


Fig. 3—A simple drawer

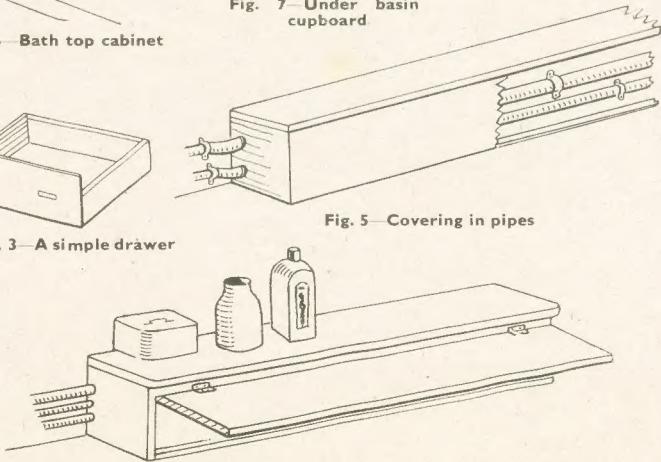


Fig. 5—Covering in pipes

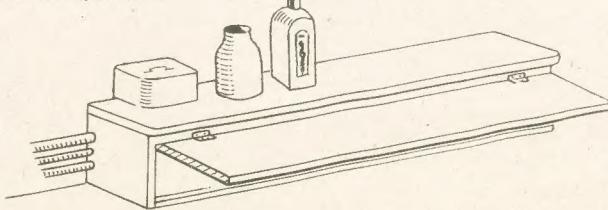


Fig. 6—Hinged door for access

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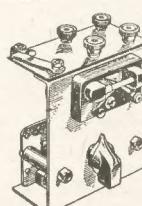
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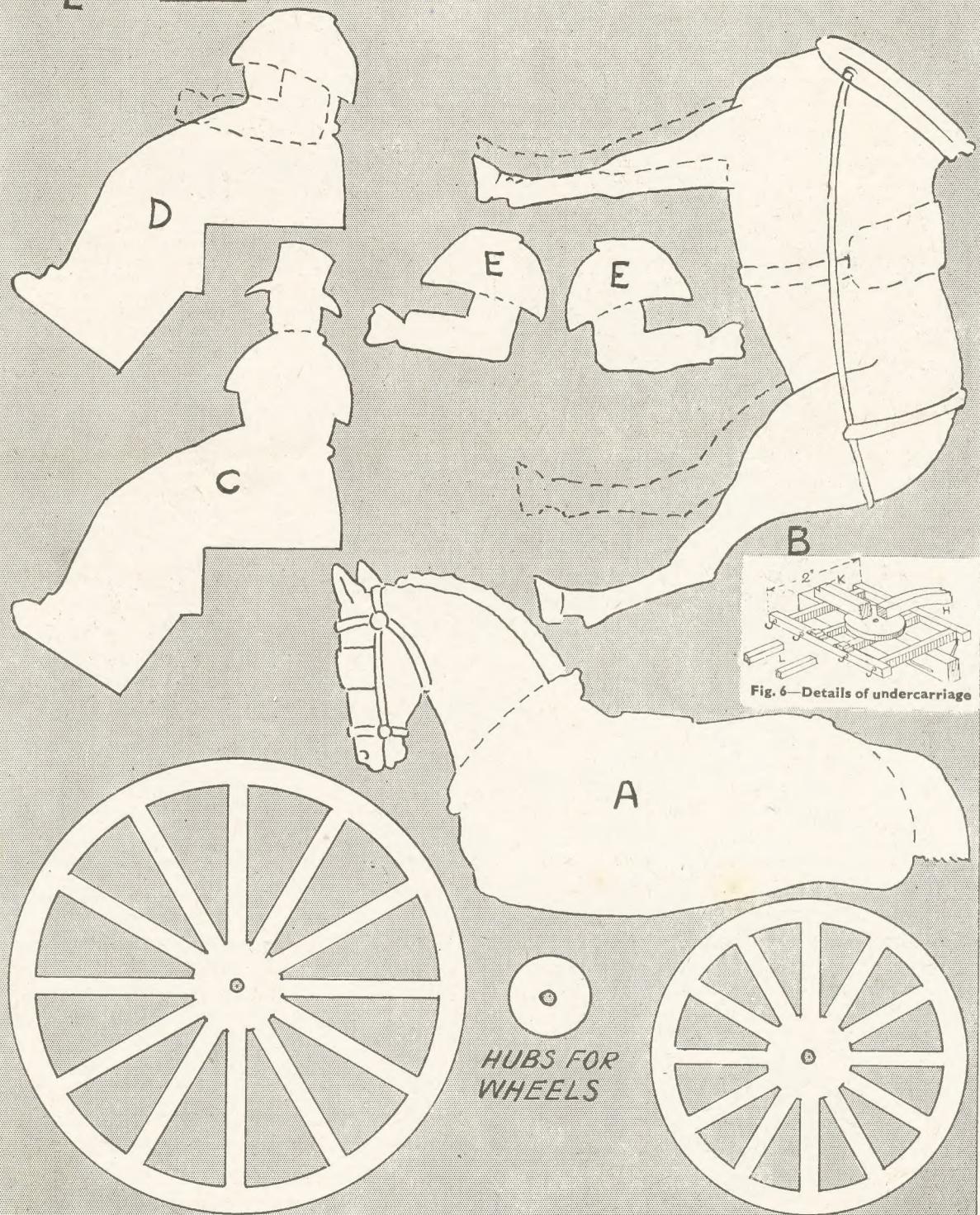
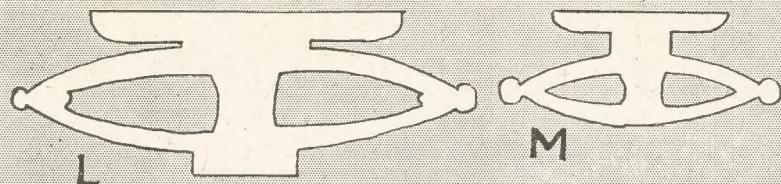


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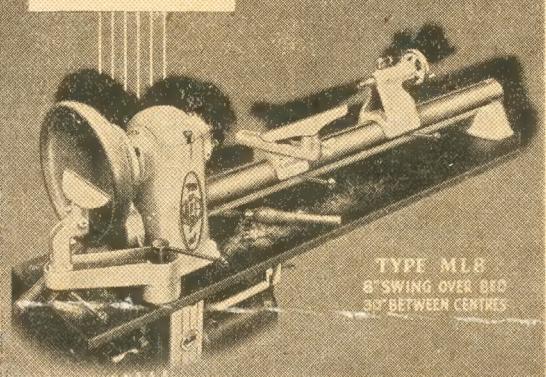
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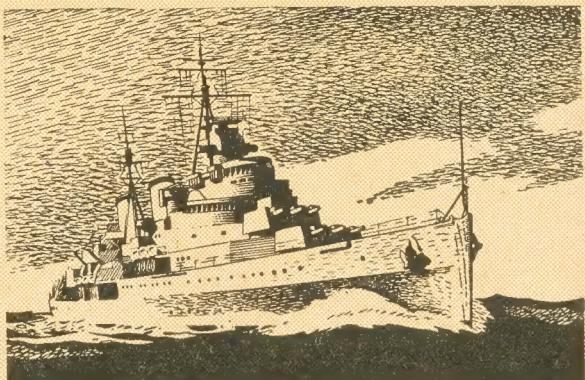
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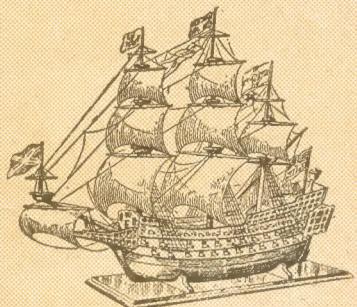
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